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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/789,539	02/27/2004	Bruno De Man	129405-1/YOD GERD:0049	9455
7590 05/31/2005			EXAMINER	
Patrick S. Yoder Fletcher Yoder P.O. Box 692289 Houston, TX 77269-2289			SUCHECKI, KRYSZYNA	
			ART UNIT	PAPER NUMBER
			2882	
DATE MAILED: 05/31/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/789,539	DE MAN ET AL.	
	Examiner	Art Unit	
	Krystyna Suchecki	2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13, 15-18, 20-25, 27 and 28 is/are rejected.
- 7) ☒ Claim(s) 14, 19 and 26 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>2/27/04</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Objections

1. Claims 1, 13 and 14 are objected to because of the following informalities: Claim 1 recites an intended use for a CT imaging system without any positive means to control the apparatus. The device is only “configured to” operate as desired. There is no controller or other part of the apparatus to cause the emission points to activate as claimed. Claims 13 and 14 are objected to since there are no means to cause the recited actions of the emission points. A device need only be “capable of” operating as claimed. Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 2, 9-12, 17, 21 and 28 are rejected under 35 U.S.C. 102(b) as being anticipated by Wagner (US 4,057,725).

4. Regarding Claims 1, 9, 17 and 28, Wagner teaches a CT imaging system and method (Figure 2), comprising: an X-ray source (11) comprising two or more discrete, emission points (11-21), wherein the emission points are configured to be individually activated and wherein each emission point, when activated, emits a respective stream of radiation through a respective portion of a field of view (Column 4, lines 19-36); and a detector array comprising a plurality of

detector elements (51-61), wherein each detector element may generate one or more signals in response to the respective streams of radiation (Column 2, line 49- Column 3, line 19 and Column 4, lines 1-36), and wherein the two or more emission points are rotated about the field of view such that each emission point, when activated, emits the respective stream of radiation from a respective view angle (Column 4, lines 1-36).

5. Regarding Claim 2, Wagner teaches the CT imaging system, wherein the two or more discrete, emission points comprise X-ray tubes, since the system seeks to improve upon the efficiency of tube-type x-ray sources (Column 1, lines 45-54).

6. Regarding Claims 10 and 21, Wagner teaches the CT imaging system and method, wherein the two or more emission points are rotated by mechanically rotating the emission points about the field of view (Column 4, lines 1-36).

7. Regarding Claim 11, Wagner teaches the CT imaging system, wherein the two or more emission points are effectively rotated by activation of stationary emission points disposed in a ring about the field of view (Column 4, lines 1-36).

8. Regarding Claim 12, Wagner teaches the CT imaging system, wherein the stationary emission points are configured to be sequentially activated (Column 4, lines 1-36).

9. Claims 1, 3-8, 16, 17 and 22 are rejected under 35 U.S.C. 102(e) as being anticipated by Taskar (US 6,674,837).

10. Regarding Claims 1 and 17, Taskar teaches a CT imaging system and method (Column 6, lines 1-3), comprising: an X-ray source comprising two or more discrete, emission points, wherein the emission points are configured to be individually activated and wherein each

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emission point, when activated, emits a respective stream of radiation through a respective portion of a field of view (Column 5, lines 19-60); and a detector array comprising a plurality of detector elements, wherein each detector element may generate one or more signals in response to the respective streams of radiation, and routine therefor, (Column 5, line 19- Column 6, line 10), and wherein the X-ray source is electronically rotated (Column 6, lines 1-3).

11. Regarding Claim 3, Taskar teaches the CT imaging system, wherein the X-ray source comprises one of a solid-state X-ray source and a thermionic X-ray source (Column 3, lines 42-67).

12. Regarding Claim 4, Taskar teaches the CT imaging system, wherein the two or more discrete, emission points comprise field emitters (Column 3, lines 42-67).

13. Regarding Claim 5, Taskar teaches the CT imaging system, wherein the detector array comprises a flat panel detector (Column 4, line 56- Column 5, line 16).

14. Regarding Claim 6, Taskar teaches the CT imaging system, wherein the detector array comprises an energy discrimination detector, since the physical configuration of the detector removes unwanted energies (Column 4, lines 56- Column 5, line 16).

15. Regarding Claim 7, Taskar teaches the CT imaging system, wherein the X-ray source comprises duplicate emission points along the longitudinal axis (Column 3, lines 42- 67).

16. Regarding Claim 8, Taskar teaches the CT imaging system, wherein the X-ray source comprises offset emission points along the longitudinal axis (Column 3, lines 42-67).

17. Regarding Claim 16, Taskar teaches the CT imaging system, as recited in claim 1, further comprising: a system controller configured to control the one or more X-ray sources and to acquire the one or more signals from the plurality of detector elements via a data acquisition

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system; a computer system configured to receive the one or more signals and to process the one or more signals to generate one or more images; and an operator workstation configured to display the one or more images (Column 5, lines 19- 48).

18. Regarding Claim 22, Taskar teaches effectively rotating the X-ray source comprising activating the two or more emission points in a sequence, wherein the two or more emission points are disposed in a stationary ring about the field of view (Column 5, line 19- Column 6, line 10).

Claim Rejections - 35 USC § 103

19. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

20. Claims 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taskar.

21. Regarding Claims 23-25, Taskar teaches a CT imaging system and method with adaptive, addressable circuitry (Column 2, lines 9-41; Column 5, lines 19-54 and Column 6, lines 1-3), comprising: circuitry for [electronically] rotating an X-ray source about a field of view, wherein the X-ray source comprises two or more discrete, emission points (Column 5, line 19- Column 6, line 10); circuitry for individually activating at least two of the emission points at view angles around the field of view such that each emission point emits a respective stream of radiation through a respective portion of the field of view when activated (Column 5, lines 37-48); circuitry for acquiring a plurality of signals from a detector, wherein the plurality of signals are generated in response to the respective streams of radiation (Column 6, lines 61-66); circuitry for

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processing the plurality of signals to generate one or more images Column 5, lines 8-16); wherein the circuitry for individually activating at least two of the emission points activates a second set of emission points at a second set of view angles (Column 5, lines 19-48).

22. Taskar fails to specify that the circuitry is associated with routines in a computer program on one or more computer readable media.

23. Computer programs with routines and associated computer readable media are known enhancements to circuitry systems. Such programs and media allow defective or damaged circuitry within a system to be replaced and re-programmed without the need to replace whole systems. The programs and media allow for circuitry that is more sectionalized, so that the defective or damaged parts are also smaller and more localized, assisting with lower cost repair. The programs, routines and media also allow the circuitry to be re-programmed more easily when adapted, since a program can apply changes without re-wiring each circuit in the system. The readable media allows the program to be moved from system to system so that the program can be replicated and stored in the system memory, so that the program does not need to be represented in hard wire form. This simplification allows for smaller systems, since the number of hard-wired components is reduced.

24. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use computer programming, routines and computer readable media in the system of Taskar since the programming and media allow for lower cost repairs to the systems, simplified adaptation, simplified system replication and less hard-wired components.

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25. Regarding Claims 13 and 18, Wagner teaches a system and method where multiple individual sources can be activated simultaneously, almost simultaneously, or sequentially (Column 4, lines 1-36).

26. Wagner fails to specifically teach that the sources are activated so that a first subset of two or more emission points are activated at a first set of view angles and wherein a second subset of two or more emission points are activated at a subset of the first set of view angles.

27. Wagner implies that a compromise between simultaneous and sequential activation of the sources is available by activating the sources “almost simultaneously” for the benefit of compromising between scanning speed and noise. An “almost simultaneous” system would cause a portion of the sources to be activated while others were inactive. This would allow, for instance, a system where half of the sources were activated at a time to provide a system with the benefits of less noise than a simultaneous scan which is also completed faster than a sequentially activated scan.

28. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to activate the sources of Wagner so that a first subset of two or more emission points are activated at a first set of view angles and wherein a second subset of two or more emission points are activated at a subset of the first set of view angles for the benefits of a system with less noise than a simultaneous scan which is also completes faster than a sequentially activated scan.

29. Claims 15, 20 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taskar in view of Light (US 5,764,721).

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30. Regarding Claims 15, 20 and 27, Taskar teaches a CT imaging system, method and computer program as above with the adjustment of multiple sources to allow only the flux necessary to cause an adequate discrimination on a detector (Column 5, line 61- Column 6, line 10).

31. Taskar fails to specifically teach the flux of each respective stream of radiation as determined based on the respective view angle and a respective path length through a patient.

32. Light teaches improvements to patient and object scanning (Column 3, lines 8-35) so that variations in patients and objects with respect to the path length through them can be accounted for so that a source flux can be adjusted based upon the relationship of the path length and view angle (Column 4, line 9- Column 5, line 21). By adjusting the flux in relation to the path length and view angle, erroneous attenuation values can be eliminated (Column 3, lines 33-35 and Column 4, lines 32-36).

33. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to cause the flux adjustment of Taskar as taught by Light in order to account for variations in object/ patient path lengths and source view angles so as to eliminate erroneous attenuation values (Column 3, lines 33-35 and Column 4, lines 32-36).

Allowable Subject Matter

34. Claims 14, 19 and 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 14 must also overcome the claim objections set forth above.

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35. The following is a statement of reasons for the indication of allowable subject matter: Claims 14, 19 and 26 contain allowable subject matter for at least the reason that the prior art of record fails to teach or fairly suggest a CT imaging system, method or computer program having two or more discrete emission points activated in first and second subsets at first and second view angles wherein the first set of view angles comprises every view angle and wherein the subset comprises every other view angle as claimed. While subsets are taught in the art, as above in Wagner and also in Mihara (US 6,807,248), there is no suggestion in the prior art of record to activate multiple source emission points at all view angles and every other view angle as claimed. Mihara teaches the sequential activation of spaced emission points but fails to teach this in combination with activation of all emission points.

Conclusion

36. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Application to Taskar (US 2002/0074929) is of interest for the teachings of Paragraph 65, which teaches rotation of a detector in a CT system. The detector is one of several usable by Taskar in Us 6,674,837.

37. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Krystyna Suchecki whose telephone number is (571) 272-2495. The examiner can normally be reached on M-F, 9-5.

38. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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39. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ks

Craig E Church

Craig E. Church
Primary Examiner